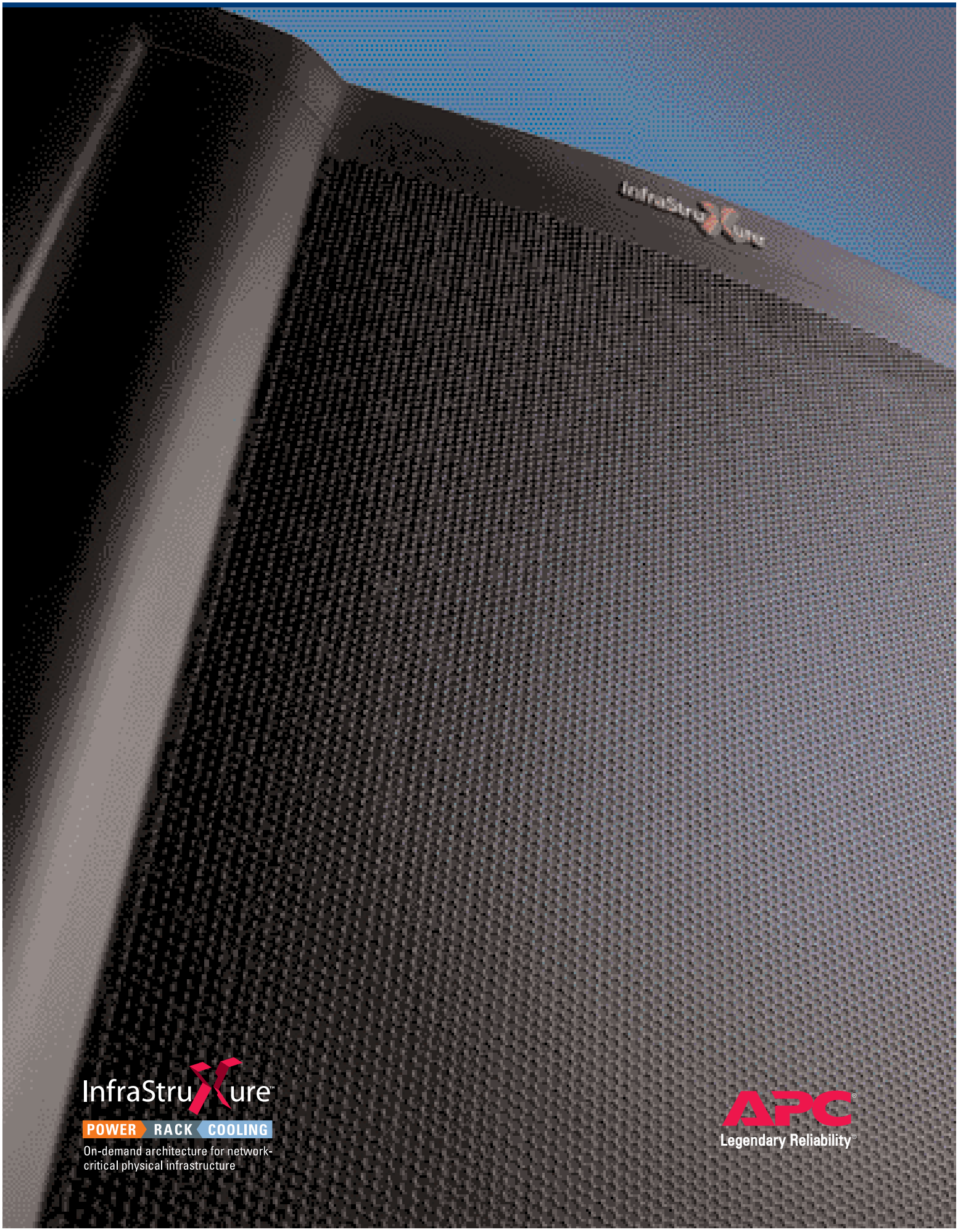
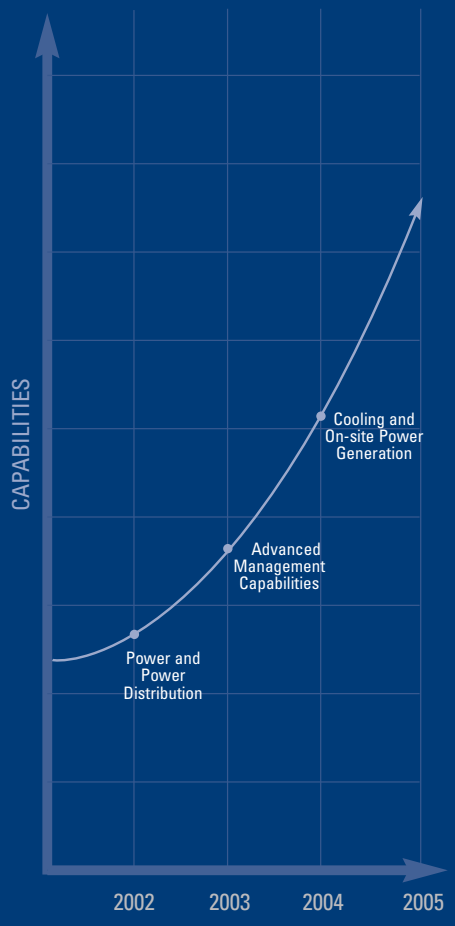

InfraStruXure
POWER RACK COOLING
On-demand architecture for network-critical physical infrastructure
APC
Legendary Reliability®

Ongoing Innovation



Because InfraStruXure's capabilities continue to grow over time, you can build upon your investment into the future.

InfraStruXure™

POWER RACK COOLING

On-demand architecture for network-critical physical infrastructure

Introduction

> KEY CONSIDERATIONS OF NCPI 2

Typical Configurations

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> COMPUTER ROOMS [1-5 RACKS] 5
> SMALL DATA CENTERS [5-20 RACKS] 6
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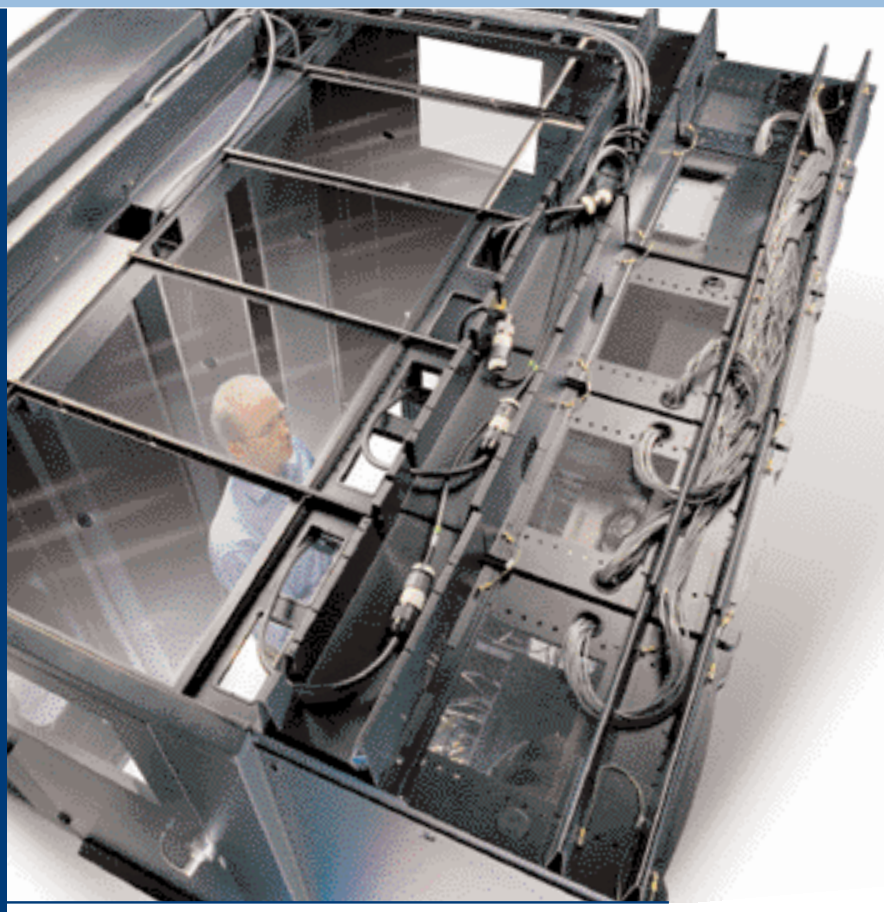


On-demand data center architecture from APC

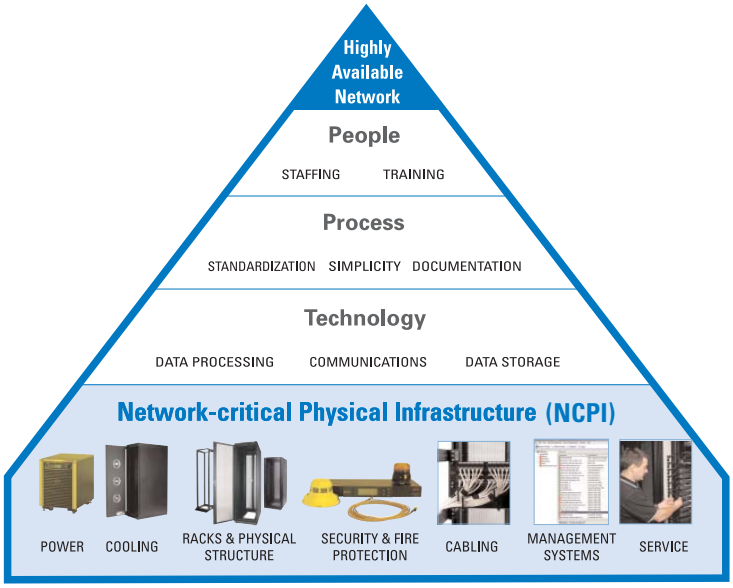
InfraStruXure™

Network-critical Physical Infrastructure

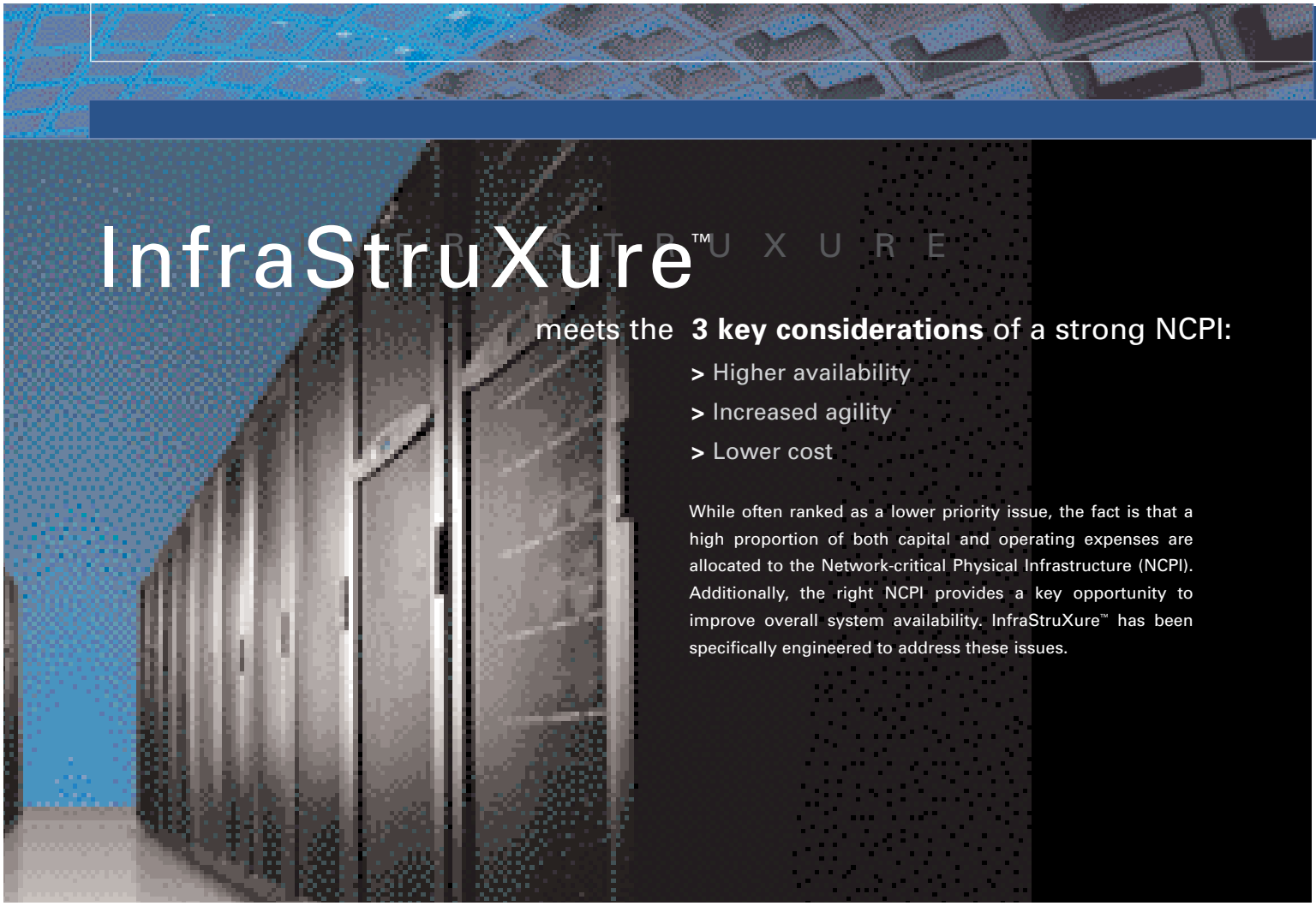
APC has standardized on modular, scalable, open building blocks in developing InfraStruXure™, its on-demand architecture for Network-critical Physical Infrastructure (NCPI).

This design method parallels the streamlining of IT systems from mainframes to modular servers, leaving behind the complex electrical and mechanical approach of legacy power and cooling systems.

InfraStruXure's modular architecture can be optimally configured for installations from wiring closets and computer rooms to large data centers. Turn to the typical configurations on page 4 to see examples of how easily InfraStruXure can be configured.



The support structure of all highly available networks, NCPI consists of power, cooling, racks and physical structure, security and fire protection, cabling, and the management and servicing of these elements.



InfraStruXure™

meets the **3 key considerations** of a strong NCPI:

> Higher availability

> Increased agility

> Lower cost

While often ranked as a lower priority issue, the fact is that a high proportion of both capital and operating expenses are allocated to the Network-critical Physical Infrastructure (NCPI). Additionally, the right NCPI provides a key opportunity to improve overall system availability. InfraStruXure™ has been specifically engineered to address these issues.

1 Increase the availability and reliability of IT systems

In a world that tolerates zero downtime, system availability is essential. And as technologies and environments change - consider server consolidation, migration, and centralization - the only way to ensure against system downtime is to have a strong NCPI, the foundation of highly available networks. InfraStruXure™ architecture is NCPI designed for optimal availability.

> Highest cooling density available (up to 20kW of cooling per rack)

> Increased runtime from minutes to days

> Redundant design of system eliminates single points of failure

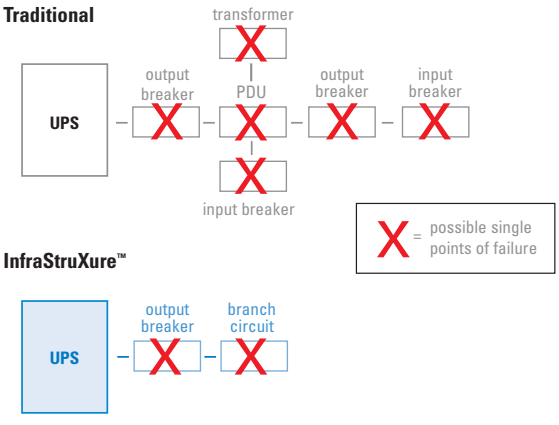
> Factory pre-tested system reduces downtime

> Hot swappable modules lower mean-time-to-recovery

> Proactive management identifies potential problems before they occur

> Locking enclosures provide enhanced security

InfraStruXure™ Reduces Single Points of Failure



By reducing the single points of failure between the UPS and the critical load, InfraStruXure™ architecture increases system availability.

2 Adapt quickly to changing environments and technologies

To respond effectively to changing environments, the NCPI must be specified, designed, and deployed quickly. Unfortunately, it often takes months to deploy traditional systems.

Whether driven by new technologies like blade servers or VoIP, or new applications like disaster recovery, IT moves, adds, or changes need to happen within days or weeks, not months or years. And as power densities, cabling densities, and equipment vendors continue to change, the NCPI must be adaptable enough to respond. InfraStruXure's modular, building block approach is agile enough to meet the ever-changing demands of IT.

ADAPTABILITY

> Rack-based modular approach allows system to be easily moved

> Scalable design accommodates changing power densities

> Power distribution system accommodates changing power densities, voltages, and receptacle types

> Vendor-neutral enclosures guarantee compatibility with major IT vendors

SPEED

> Pre-configured systems (Single SKUs)

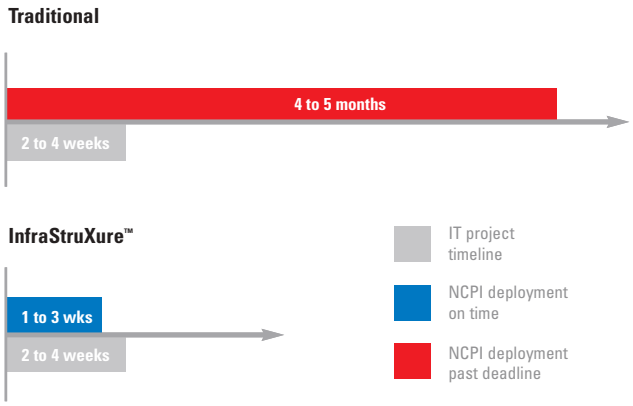
> Web-based configuration tool simplifies the design process

> Configure-to-order approach accelerates installation

> Integrated pre-engineered system eliminates need for on-site system test

> Rack-based, standardized modules facilitate quick installation

InfraStruXure™ Increases Speed of Deployment



The InfraStruXure™ approach includes a revolutionary on-line design and modular system components that dramatically increase the speed of deployment. Now NCPI deployment can keep pace with the deployment of new IT projects.

3 Minimize upfront and operating costs

Traditional NCPI is often expensive to design, install, and maintain due to one-time engineering costs, high service requirements, and the underutilization of capacity. InfraStruXure's "pay-as-you-grow" NCPI allows you to scale as required, while integrated in-row cooling eliminates the need for a raised floor regardless of environment.

> On-demand design prevents oversizing and lowers cost

> Standardized modules minimize one-time engineering costs

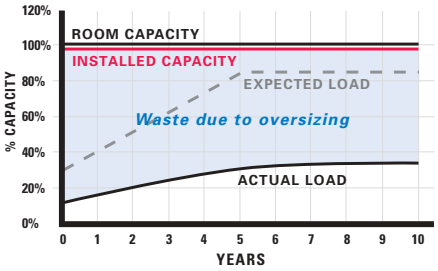
> Built-in redundancy eliminates need to buy second UPS

> Integrated cabling and cooling eliminates need for raised floor

InfraStruXure™ Decreases Waste Due to Oversizing

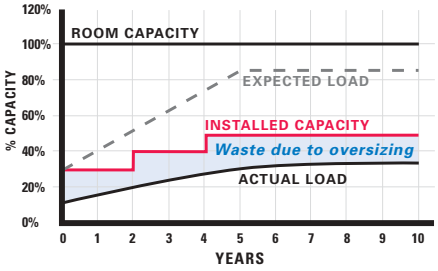
Traditional

Traditional NCPI is built based upon on the expected future loads. If these loads are not quickly realized, waste occurs.



InfraStruXure™

Scalable, modular approach minimizes the cost of oversizing.



TYPICAL CONFIGURATIONS

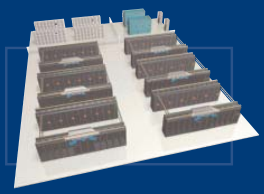
Because InfraStruXure™ architecture is easy to customize using standardized components, configurations may vary. Here are five typical InfraStruXure configurations for different size installations. To configure the right InfraStruXure for you, go to page 20.

WIRING CLOSET
[1-3 RACKS]

COMPUTER ROOMS
[1-5 RACKS]

SMALL DATA CENTERS
[5-20 RACKS]

MEDIUM DATA CENTERS
[20-100 RACKS]



LARGE DATA CENTERS
[>100 RACKS]

INFRASTRUXURE FOR WIRING CLOSETS [1 – 3 RACKS]

COMPONENTS

POWER

- [1] Smart-UPS®
- [ ] Smart-UPS® RT *(not shown)*
- [ ] Symmetra® LX *(not shown)*

RACK

- [2] NetShelter® 2-post Open Frame Racks
- [3] NetShelter® 4-Post Open Frame Racks
- [ ] Rack PDU (Basic, Metered, and Switched) *(not shown)*
- [ ] Rack Accessories *(not shown)*

COOLING

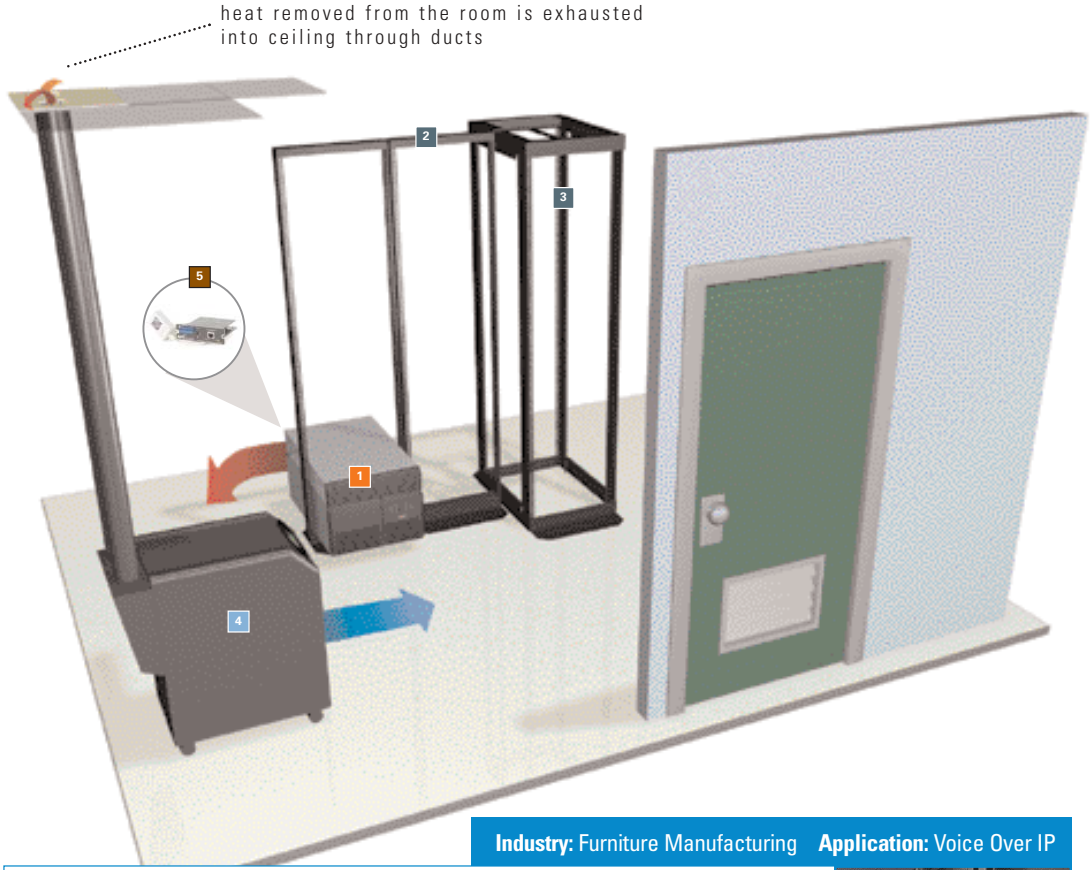
- [4] NetworkAIR™ PA4000

MANAGEMENT

- [5] UPS Network Management Card
- [ ] Environmental Monitoring Unit *(not shown)*

SERVICE

A full range of system- and component-level services are available

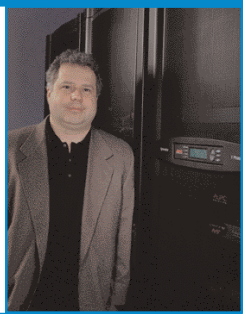


Industry: Furniture Manufacturing **Application:** Voice Over IP

"One of the goals of the new building was to consolidate the networks from the existing three buildings under one roof. This new facility operates on the Cisco Added Solution Voice Over IP architecture for video, voice, and integrated data, providing network connectivity throughout the facility. As IT Director, my imperative was to find a watertight solution that would protect our communications infrastructure by guaranteeing uninterrupted power."

"With InfraStruXure™, I know that **no matter what happens, power flow won't be interrupted.** I don't waste time wondering about how many circuits I need to set aside for the panel, or if I need a circuit breaker in the panel. **I know InfraStruXure is running behind the scenes, protecting my equipment, my company, and allowing us to communicate with our customers."**

Markus M. Hill | Director of Technology and Information Services | **Brayton International**



INFRASTRUXURE FOR COMPUTER ROOMS [1 – 5 RACKS]

COMPONENTS

POWER

- ☐ Smart-UPS® *(not shown)*
- ☐ Smart-UPS® RT *(not shown)*
- 1 Symmetra® LX

RACK

- 2 NetShelter® VX Enclosure
- 3 Rack PDU (Basic, Metered, and Switched)
- ☐ Rack Accessories *(not shown)*

COOLING

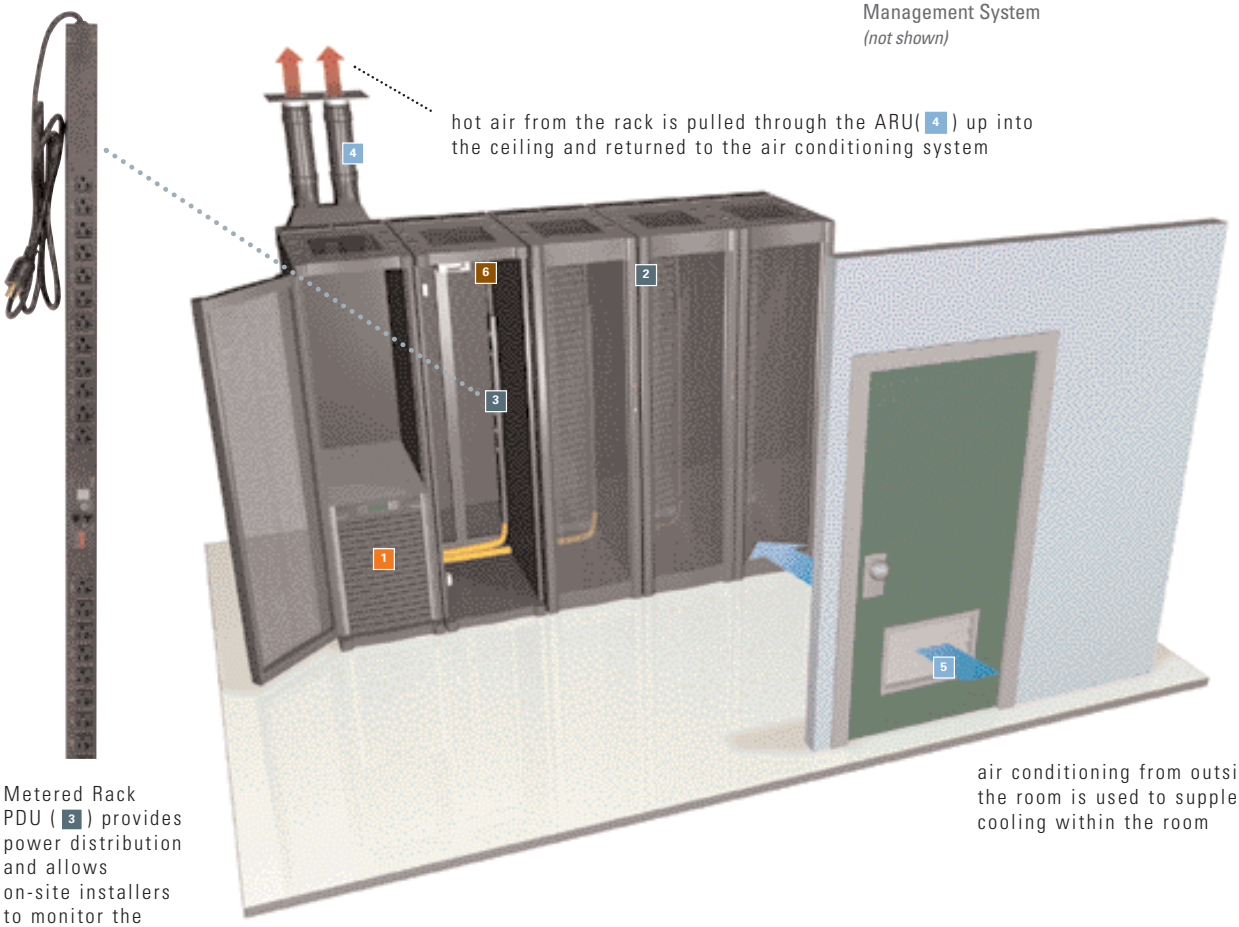
- 4 Rack Air Removal Unit (ARU)
- ☐ NetworkAIR™ PA4000 *(not shown)*
- 5 Door Grille Kit

MANAGEMENT

- ☐ InfraStruXure™ Manager *(not shown)*
- 6 Environmental Monitoring Unit
- ☐ Environmental Management System *(not shown)*

SERVICE

A full range of system- and component-level services are available



hot air from the rack is pulled through the ARU(4) up into the ceiling and returned to the air conditioning system

Metered Rack PDU (3) provides power distribution and allows on-site installers to monitor the aggregate current draw

air conditioning from outside the room is used to supplement cooling within the room

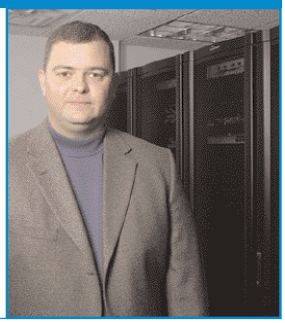
Industry: Banking **Application:** Server Consolidation

"During our four years of operation, we have experienced phenomenal growth. Our systems are critical to the success of our organization. Any downtime risks our reputation."

"Our rapid growth prompted us to bring all outside services in-house, including item and core processing. We built a new operations center. During the design phase of our operations center, we recognized the need to reduce the space required for our systems and we had to pull this off without compromising neatness and cable management."

"InfraStruXure™ costs less than offerings from the competition. It's an easily managed, fully integrated power and rack solution that affords me **the luxury of having to deal with only one vendor**. InfraStruXure addressed the power backup requirements for our centralized servers, and **provided us with significant space savings."**

Christopher Hutchinson | Vice President of Operations | **First Reliance Bank**



LEGEND

power routing *data routing* *cold air* *hot air*

To configure the right InfraStruXure™ for you, go to page 20.

COMPONENTS

POWER

- ☐ InfraStruXure™ 20kW UPS with Power Distribution Unit *(not shown)*
- 1 Symmetra® PX 40kW UPS
- 2 InfraStruXure 40kW Power Distribution Unit
- ☐ XR Battery Enclosure *(not shown)*
- 3 Automatic Transfer Switch with Distribution Panel
- 4 Standby Power Generator

RACK

- 5 NetShelter® VX Enclosure
- ☐ Rack PDU (Basic, Metered, and Switched) *(not shown)*
- ☐ Rack Accessories *(not shown)*

COOLING

- 6 NetworkAIR™ IR 40kW
- ☐ Hot-aisle Containment System *(not shown)*
- ☐ Rack Air Removal Unit (ARU) *(not shown)*

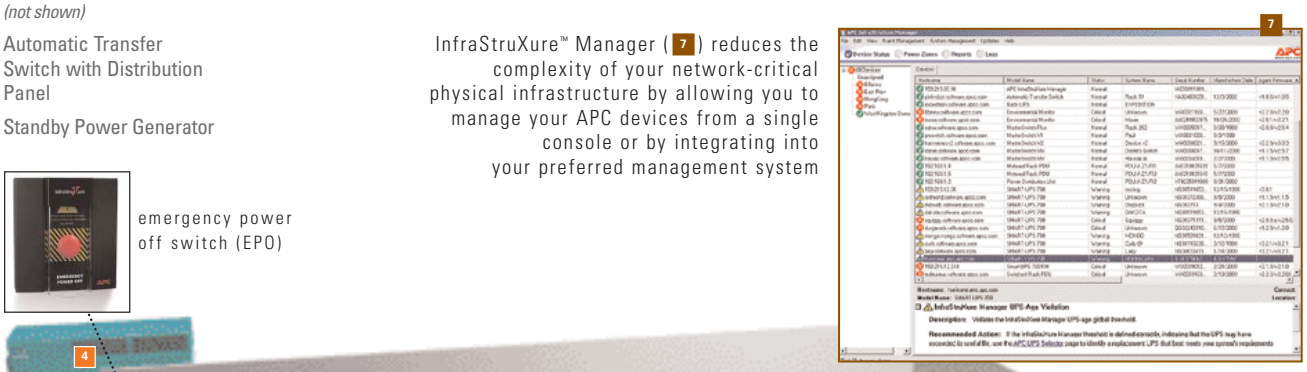
MANAGEMENT

- 7 InfraStruXure™ Manager
- ☐ Environmental Monitoring Unit (not shown)
- ☐ Environmental Management System *(not shown)*

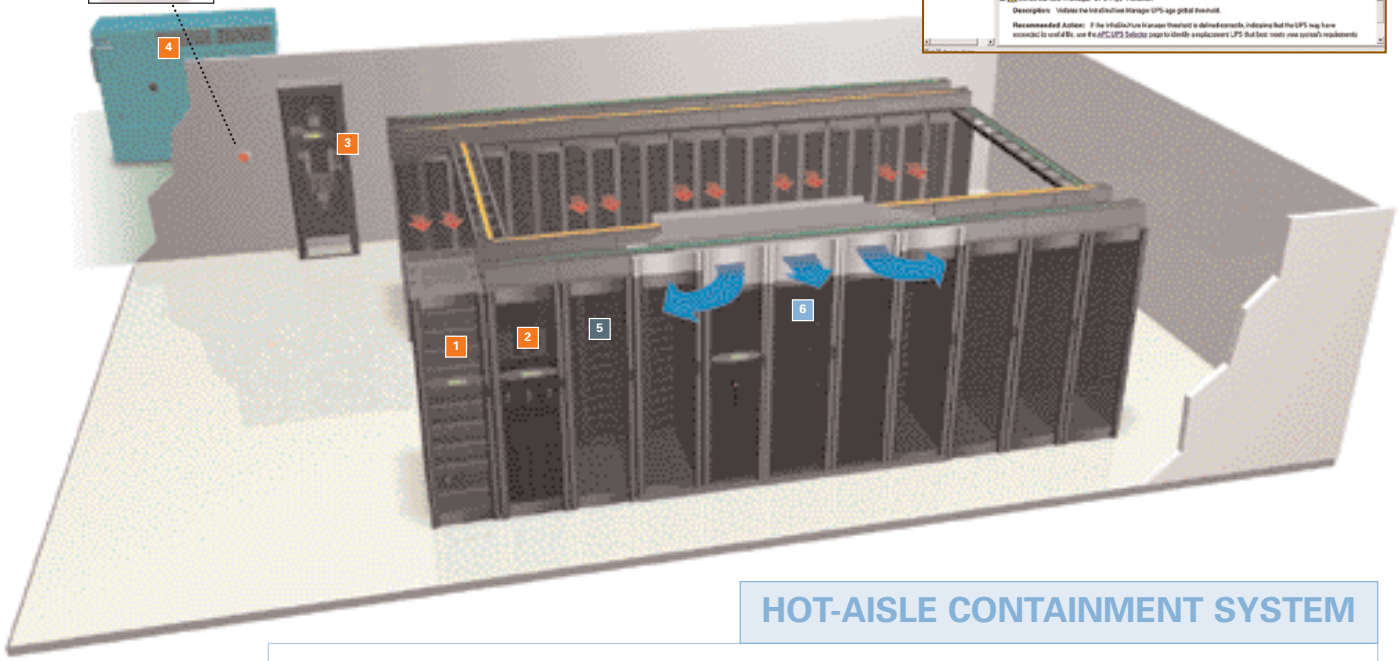
SERVICE

A full range of system- and component-level services are available

InfraStruXure™ Manager (7) reduces the complexity of your network-critical physical infrastructure by allowing you to manage your APC devices from a single console or by integrating into your preferred management system



emergency power off switch (EPO)

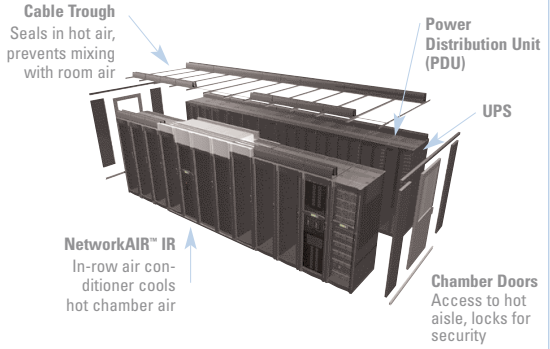


HOT-AISLE CONTAINMENT SYSTEM

The InfraStruXure™ Hot-aisle Containment System is a patent-pending system that cools up to 20kW of blade servers in a single enclosure. Its compact footprint and integrated, modular components make it ideal for applications such as:

- > Existing Data Centers with Limited Capacities
- > Server Consolidation Projects
- > Rack Storage Systems
- > Disaster Recovery Sites
- > Blade Server Roll outs
- > Converted Spaces

See page 13 for more information


Cable Trough
Seals in hot air, prevents mixing with room air
Power Distribution Unit (PDU)
UPS
NetworkAIR™ IR
In-row air conditioner cools hot chamber air
Chamber Doors
Access to hot aisle, locks for security

INFRASTRUXURE FOR MEDIUM DATA CENTERS [20 – 100 RACKS]

COMPONENTS

POWER

1. Symmetra® PX 80kW UPS
2. InfraStruXure™ 80kW Power Distribution Unit
3. XR Battery Enclosure
4. InfraStruXure Rack Distribution Panel
5. Automatic Transfer Switch with Distribution Panel
6. Standby Power Generator

RACK

7. NetShelter® VX Enclosure
- ☐ Rack PDU (Basic, Metered, and Switched) *(not shown)*
- ☐ Rack Accessories *(not shown)*

COOLING

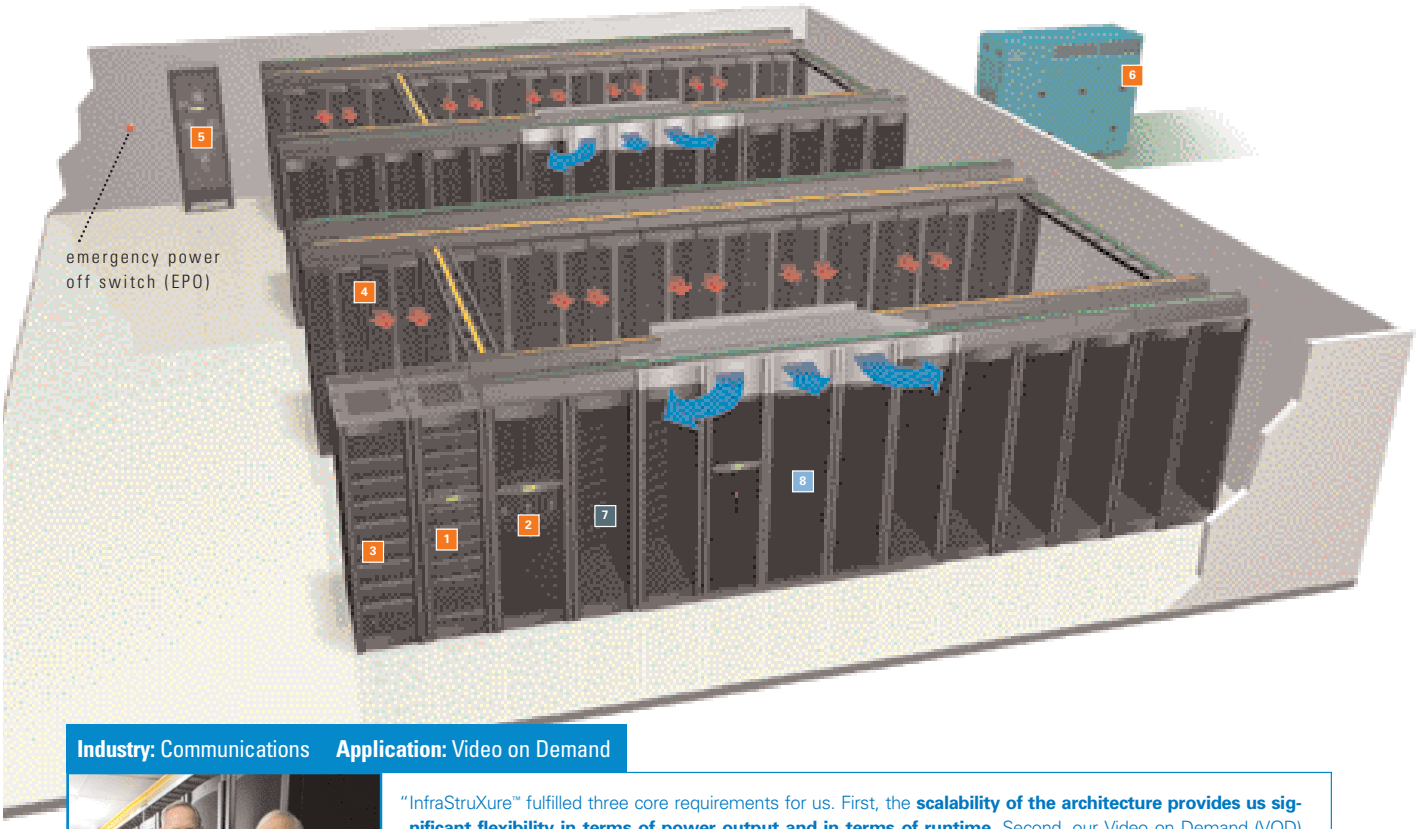
- ☐ Hot-aisle Containment System *(not shown)*
8. NetworkAIR™ IR 40kW

MANAGEMENT

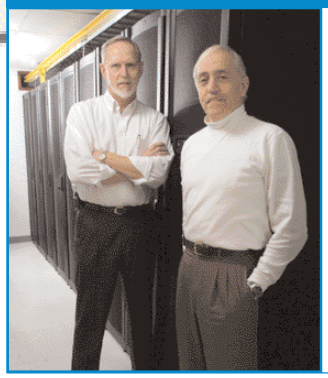
- ☐ InfraStruXure™ Manager *(not shown)*
- ☐ Environmental Monitoring Unit *(not shown)*
- ☐ Environmental Management System *(not shown)*

SERVICE

A full range of system- and component-level services are available



Industry: Communications **Application:** Video on Demand



"InfraStruXure™ fulfilled three core requirements for us. First, the **scalability of the architecture provides us significant flexibility in terms of power output and in terms of runtime.** Second, our Video on Demand (VOD) servers are air cooled from front to back. **The APC racks that house the InfraStruXure are also designed to cool from front to back**. So the same racks can effectively house our power system and our servers. Third, **InfraStruXure gives us the ability to monitor our power system remotely**. It provides us with battery life data, alarms, environmental monitoring data, and greatly increases our ability to forecast and prevent potential failures by establishing an effective and efficient battery replacement cycle. We no longer have to deal with a single point of failure."

"We wanted an upgradeable solution that could scale through changes and still offer us long-term value. **InfraStruXure's modular approach makes it easy to upgrade anytime**. With InfraStruXure's pay-as-you-grow architecture, we haven't had to invest in more than we currently need. **With InfraStruXure, I don't have to buy a significant amount of extra equipment and horsepower upfront that I may or may not have to utilize.**"

Rich Flanders, Director of Engineering | Vince Pombo, VP of Engineering (right) | **Time Warner Cable**

LEGEND

power routing | *RDP power feed* | *data routing* | *cold air* | *hot air*

To configure the right InfraStruXure™ for you, go to page 20.

INFRASTRUXURE FOR LARGE DATA CENTERS [>100 RACKS]

COMPONENTS

POWER

1. Symmetra® MW UPS
2. InfraStruXure™ 150kW Power Distribution Unit (PDU)
3. Automatic Transfer Switch with Distribution Panel
4. Standby Power Generator

RACK

5. NetShelter® VX Enclosure
- Rack PDU (Basic, Metered, and Switched) *(not shown)*
- Rack Accessories *(not shown)*

COOLING

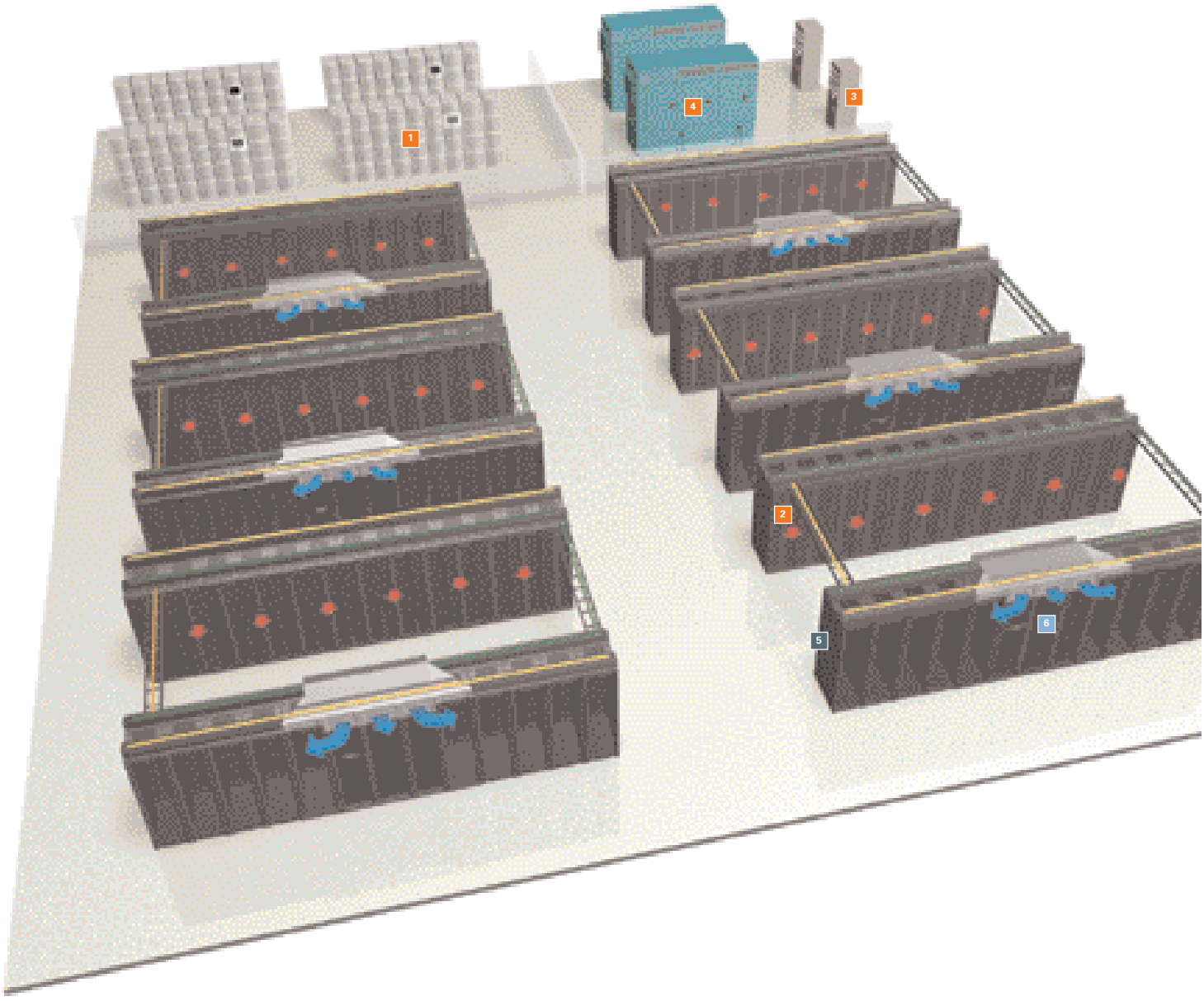
6. NetworkAIR™ IR 40kW
- Hot-aisle Containment System *(not shown)*
- Rack Air Removal Unit (ARU) *(not shown)*

MANAGEMENT

- InfraStruXure™ Manager *(not shown)*
- Environmental Monitoring Unit *(not shown)*
- Environmental Management System *(not shown)*

SERVICE

A full range of system- and component-level services are available



LEGEND

power routing | *RDP power feed* | *data routing* | *cold air* | *hot air*

To configure the right InfraStruXure™ for you, go to page 20.

OVERVIEW OF INFRASTRUXURE COMPONENTS

InfraStruXure™ architecture has a wide range of integrated components and service offerings.

POWER (SEE PAGE 10)

> Built-in redundancy eliminates the need for a second UPS

> Hot-swappable, user-replaceable modules lower mean-time-to-recovery (MTTR)

> Scalable design lets you buy what you need now, then add power or runtime capabilities later

> Integrated power generation enables you to increase runtime from minutes to days

COOLING (SEE PAGE 12)

> Direct-drive technology eliminates single points of failure

> Compact, high capacity solution design saves space

> Flexible solutions perform effectively in non-raised floor environments

> Adjustable electronic controls eliminate need for manual, mechanical modifications

RACK (SEE PAGE 14)

> Local and remote current monitoring and power management with alarm thresholds to avoid overloaded circuits

> Multi-branch power whips accommodate higher power reducing the overall number of whips required for each rack

> Rack platform designed to support heat densities up to 20kW

> Toolless installation of Rack PDUs and overhead cable distribution

MANAGEMENT (SEE PAGE 16)

> Open standard does not require user licenses

> Plug-and-play deployment versus legacy installation by data point

> Designed around industry standards versus proprietary solutions; integrated with leading suppliers

> Provides local-, enterprise,- or remote-level management with solutions that work together or independently

SERVICES (SEE PAGE 18)

> Full range of turn-key services allow you to focus on your core competencies

> Factory-trained professionals to install, service, and support your systems

Network and Server UPS

Smart-UPS® XL UPS or Smart-UPS® RT UPS

Smart-UPS® XL UPS

- Matching battery packs can be added to meet changing needs
- 4th generation line-interactive design provides proven performance
- Hot-swappable battery replacement system minimizes downtime
- Manageable via PowerChute® Business Edition

Smart-UPS® RT UPS

- Double conversion on-line for zero transfer time and tight voltage/frequency regulation
- High power density occupies less space and weighs less
- Hot-swappable/user-replaceable batteries ensure continuous operation of the load
- Scalable runtime: unlimited number of matching battery packs can be added to increase the runtime to the desired amount
- Manageable via PowerChute Business Edition or UPS Network Management Card

Symmetra® LX UPS

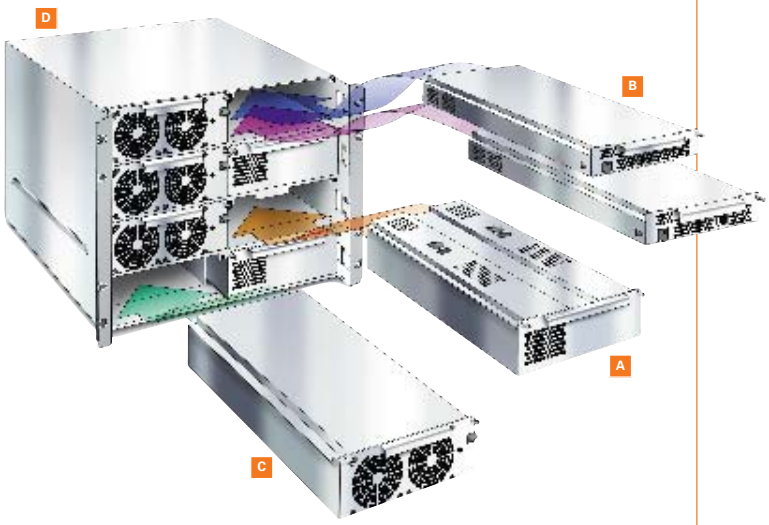
- Modular N+1 redundant design: intelligence, power, and battery modules fit in a robust frame for high availability
- Scalable power and runtime provides flexibility and lowers initial costs
- User-serviceable modules lower cost of ownership and mean time-to-recovery (MTTR)
- Manageable via UPS Network Management Card

InfraStruXure™ 20kW

- PDU and UPS in one footprint saves space and speeds deployment
- N+1 redundancy increases availability
- Scalable power capacity lowers cost
- Rack-based technology adapts easily to technology refresh

SYMMETRA® TECHNOLOGY

Symmetra® is designed as a high availability system for mission-critical applications. N+1 redundancy ensures maximum uptime and near continuous availability. The modular design makes the Symmetra easy to scale, service, and manage.

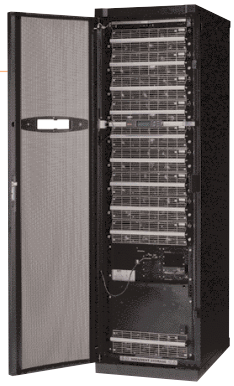


- **A** **Battery Module:** Scalable for more runtime, hot-swappable for easy replacement , N+1 redundant
- **B** **Intelligence Modules:** Redundant Intelligence Modules that are hot-swappable
- **C** **Power Module:** Provides flexibility to scale power, adds N+1 capability, hot-swappable
- **D** **Robust Frame with Automatic & Manual Bypass Switch:** Enables the UPS to transfer the load to utility power, without interruption, in case of heavy overload or faulty conditions

For more information, visit *www.apc.com*

Data Center and Facility UPS

Symmetra® PX 40-80kW UPS



- N+1 redundant design for high availability
- Scalable power and runtime for flexibility and lower cost
- User-replaceable modules for ease of service
- Rack-based design speeds deployment

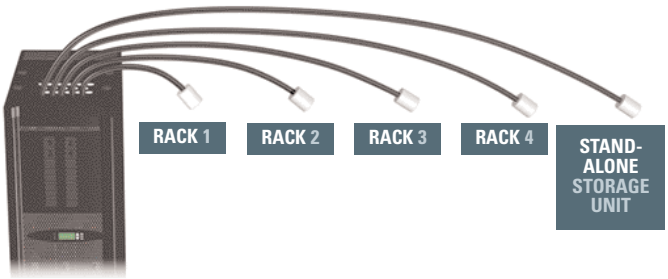
Symmetra® MW UPS

- Easy system expansion with load sharing and scalable power modules provides adaptability to changing environments
- N+1 redundant fault-tolerant design provides high availability
- Self-diagnosing function and modular-level repair reduce mean time-to-recovery (MTTR)
- Configurable LCD touch-screen with single-interface management of multiple products

For more detailed technical information on the Symmetra® MW UPS, go to *www.apc.com*

CONFIGURE-TO-ORDER

The Configure-to-order (CTO) process allows for the pre-installation of pre-tested breakers, cut-to-size power whips, load-test ports, and monitoring boards. Factory customization lets you build your InfraStruXure™ to your exact specifications for speed of deployment, high reliability, and cost savings.



Power Distribution Units

InfraStruXure™ PDU 40,60,80,150kW

- Small footprint minimizes real estate expenses for non-IT equipment
- Wraparound system bypass isolates UPS from critical load*
- Local or Web-based monitoring for ease of management
- Front and rear access facilitates service

**Not applicable for 60 or 150kW PDU*

Rack Distribution Panel (RDP)

- Power panel placed remotely from main PDU to enhance power cable management
- Available input sleeve connector for easy connection
- Variable input cable length for enhanced flexibility

Power Generation

Automatic Transfer Switch with Distribution Panel (ATS)

- Manages and delivers redundant power to InfraStruXure™ system
- Integrates with InfraStruXure small and medium data center designs
- Automatically transfers to second power source if first source falls outside user-defined range
- Monitors and controls APC's Standby Power Generator and ATS via the network

Standby Power Generator

- Take runtime requirements from minutes to days
- Dramatically reduces lead time (up to 75%)
- Meets toughest emission standards; housed within sound attenuated enclosure
- Increases availability by monitoring generator's status, runtime, and fluid levels (even when generator is off)
- Automatically performs generator tests scheduled via network connection
- 80kW, 125kW, 200kW

COOLING COMPONENTS

Air Distribution and Fans

Rack Air Removal Unit (ARU)

- Ducted exhaust system removes hot air to prevent re-circulation and eliminate air mixing
- Power or temperature controlled fan speed ensures proper amount of heat removal
- Zero 'U' solution mounts to the rear of the rack, leaving valuable rack space free

Air Removal Unit Ducting Kit converts rack air removal unit to ceiling to duct air from the room

Computer Room Air Conditioning

NetworkAIR™ IR*

- Warmer return air temperature maximizes the capacity of the system for increased efficiency
- Intelligent, proactive control, and real-time monitoring. Master microprocessor providing high level control functionality and human interface via 4-line, 80-character alphanumeric display.
- Full service, front access for routine servicing of components; narrow footprint allows for side by side placement

NetworkAIR™ PA 4000*

- Portable, compact design provides flexibility to move the unit wherever cooling is required
- Automatic restart feature returns unit to its last operating status in the event of a power failure
- On/off scheduling lowers energy costs

** Subject to regional availability*

NetworkAIR™ IR

NetworkAIR™ IR is more efficient

Close coupling the heat removal to the heat source produces warmer air temperatures, resulting in less demand for humidification and increased capacity

NetworkAIR IR is more reliable

Direct drive fans eliminate need for unreliable belts, pulleys, and specialized bearings

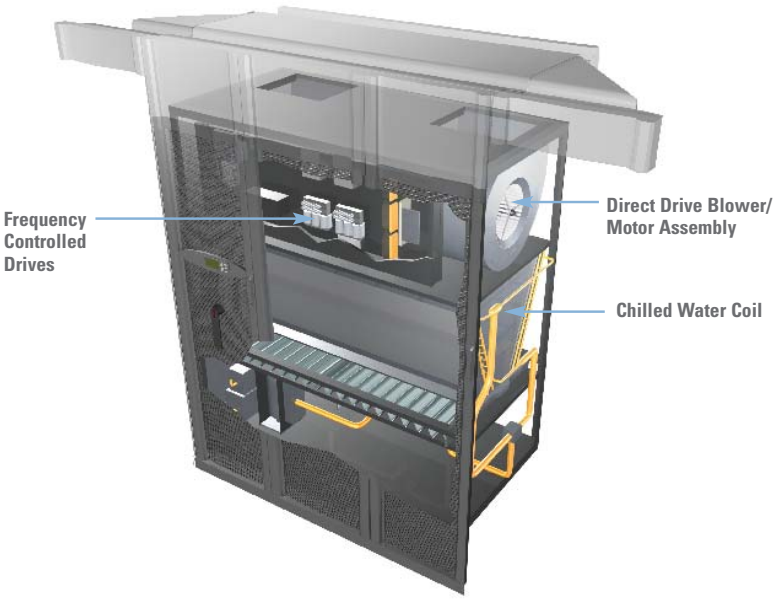
NetworkAIR IR is less expensive to maintain

Easier, more space-efficient front access

Cleaning or replacing of insulation eliminated by a double wall panel design

NetworkAIR IR is more intelligent

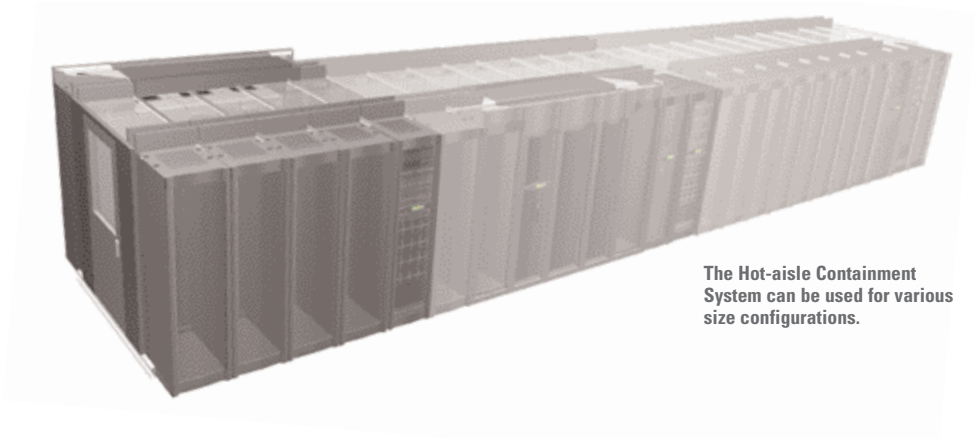
Frequency controlled fan speed provides easier and faster start up and check out



Hot-aisle Containment System

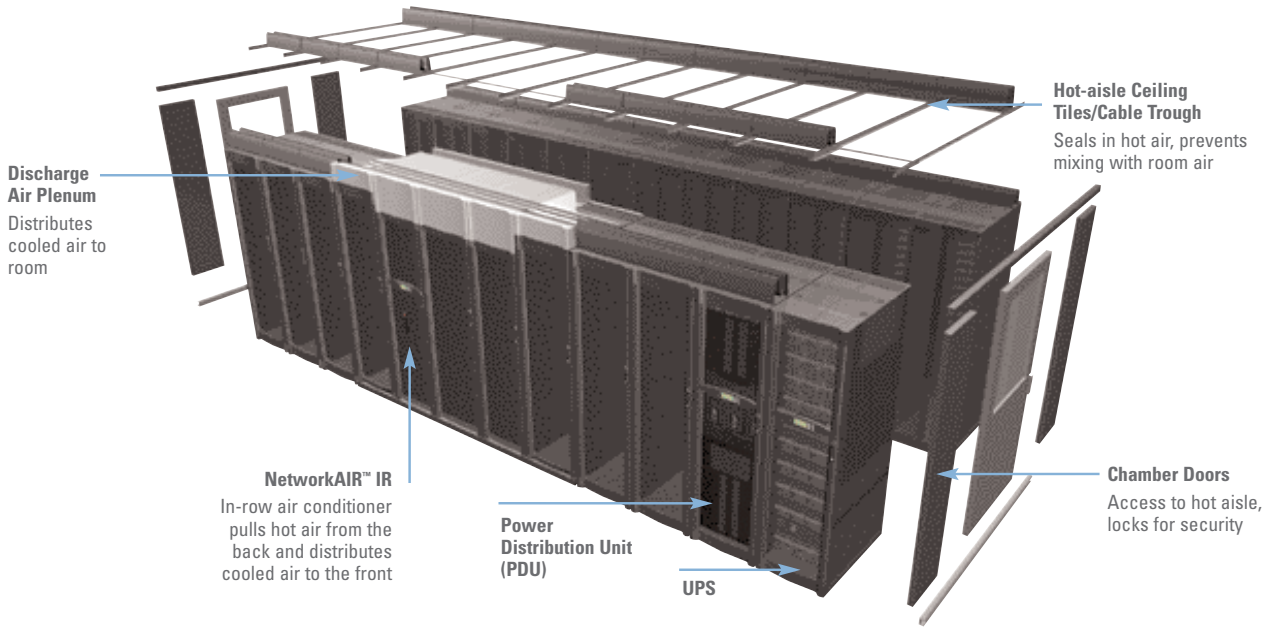
Hot-aisle Containment*

- Allows for quick deployment of high density clusters
- IT equipment can be moved or changed without system reconfiguration
- Allows for changing needs and future expansion with a pay-as-you-grow architecture
- Sealed hot aisle eliminates mixing with cold supply air increasing availability
- Increased cooling capacity and system efficiency from warmer air return temperatures
- UPS-supported fans through dual input power to cooling system



The Hot-aisle Containment System can be used for various size configurations.

HOT-AISLE CONTAINMENT TECHNOLOGY OVERVIEW


Discharge Air Plenum
Distributes cooled air to room
Hot-aisle Ceiling Tiles/Cable Trough
Seals in hot air, prevents mixing with room air
NetworkAIR™ IR
In-row air conditioner pulls hot air from the back and distributes cooled air to the front
Power Distribution Unit (PDU)
UPS
Chamber Doors
Access to hot aisle, locks for security

RACK COMPONENTS

Enclosures

NetShelter® VX

- Ventilated doors with scalable cooling options satisfy varying thermal requirements of rack-mounted applications
- Recessed power distribution channels provide easy access to multiple receptacles occupying zero U
- Cable management channels: for easy routing, management, and access to power and data cables
- Vendor-neutral mounting for guaranteed compatibility with all EIA-310 compliant 19" equipment

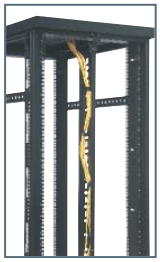
VX wide enclosure *VX 47U enclosure* *VX 42U networking enclosure*

Split rear doors

Open Frame Racks

NetShelter® 2- and 4-Post Open Frame Racks

- Offers a generous 43U of 19" equipment mounting space in a 7' (2133 mm) high design
- Available with square holes for servers or threaded holes for networking gear
- Optional roof allows use of troughs/partitions
- Self-squaring design makes assembly quick and easy, requiring only one person to fully assemble each unit



"Fits Like a Glove" guarantees that all brands of EIA-310-D compliant equipment fit inside.

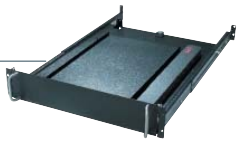
Rack Accessories

Troughs and Ladders

- Overhead cable management of power and data cables in shielded partitions
- Toolless cable ladders for row-to-row cable routing
- Third-party Trough Adapter Kits convert existing racks to accept overhead power cable troughs and data partitions (for use with non-APC racks in migration environments)
- Adjustable power cable troughs and data partitions fit seamlessly into the NetShelter® VX roof

Keyboard Drawers

1U and 2U keyboard drawers for 17" and 19" keyboards



Security Devices

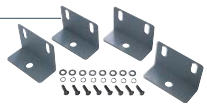
Accessories to enhance the physical security of your enclosure environment

Cable Management

Extensive options for vertical, horizontal and overhead cable management to facilitate cable routing inside and outside APC racks and enclosures

Stabilization

Anti-tip plate for standalone applications and bolt-down brackets for Uniform Building Code floor anchoring



Blanking Panels

Available in various heights, essential for proper airflow in racks

Whip Adapter*

- Twist-lock input plug provides seamless integration with multi-branch whip
- Plug spacing capable of providing power for up to 3 low power racks
- Available with 5-20, L5-20, and L6-20 receptacles to exactly match environments

Shelving

Fixed and sliding shelves with weight capacities ranging from 50-250 pounds (23-113kg)

Rack Power Distribution

Basic Rack PDU

- Affordable, simple power in/power out design
- Various amperage options
- Both domestic (NEMA) and international (IEC) versions
- Variety of horizontal & vertical mounting solutions
- Toolless mounting in NetShelter VX

Metered Rack PDUs

- Current monitoring with alarm thresholds
- Network Ready for remote monitoring
- Toolless mounting in NetShelter VX
- 3-phase and single-phase units available

Switched Rack PDUs

- Individual outlet control
- Recycle power
- Power sequencing
- Turn off unused outlets
- Current monitoring with alarm thresholds
- Network Ready for remote monitoring
- Toolless mounting in NetShelter VX
- 3-phase and single-phase units available

Pictured at right - Metered Rack PDU

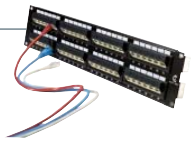
Rack-level Transfer Switch

- For solutions with 2 input power sources
- Contains any fault to individual rack or server
- 1U in height saves space
- User configurable settings
- Universal twist-lock input plug*

Rack Connectivity

Patch Panels

Patch panels, manufactured to industry standards, keep your network up and running



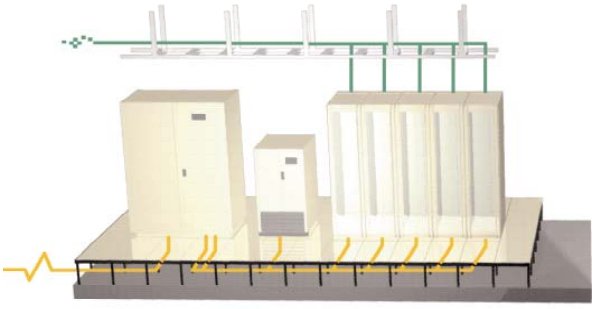
Network Patch Cables

High quality networking cables keep your network up and running

* *Subject to regional availability*

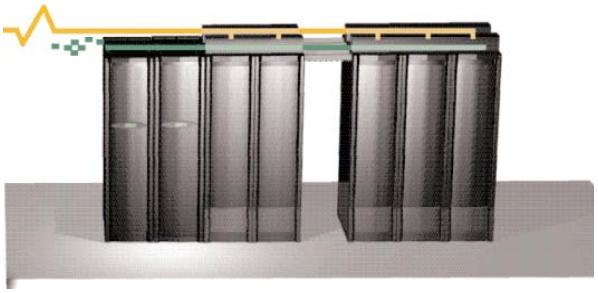
POWER AND DATA CABLE ROUTING

Traditional power and cooling system



Overhead cable trays and under-floor cabling systems limit flexibility and adaptability. Because the premise is entered, adherence to the National Electric Code is required. Under-floor, plenum-rated material is expensive and resource-intensive to install. Under-floor branch circuits can negatively affect air distribution.

Self-contained rack-based system



Self-contained, UL-listed (independent CE certified) system does not enter the premise. There is no need for under-floor, plenum-rated material. Toolless installation.

MANAGEMENT

From environmental management and UPS management to server access, APC management solutions increase availability by remotely monitoring and controlling easily and economically.

Whether managing a single device, multiple devices, or a mixture of device types, APC management solutions are easy to use and deploy.

APC management solutions work together and independently, allowing you to monitor devices locally over existing IT networks or the Web, and to be notified of problems within the system via e-mail or pager gateway notifications.

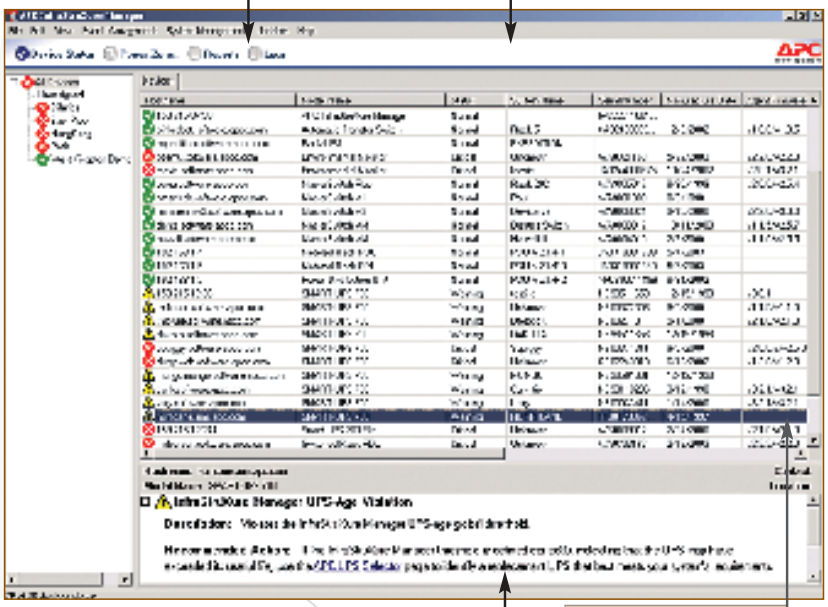
Network-critical Physical Infrastructure (NCPI) Management

InfraStruXure™ Manager

- Centralized management of APC network-critical physical infrastructure
- 1U appliance with licenses for 25, 100, or 1000 nodes
- Notification of threatening situations
- Allows you to plan for changes in availability, power, runtime, or cooling
- Integrates into your preferred management system

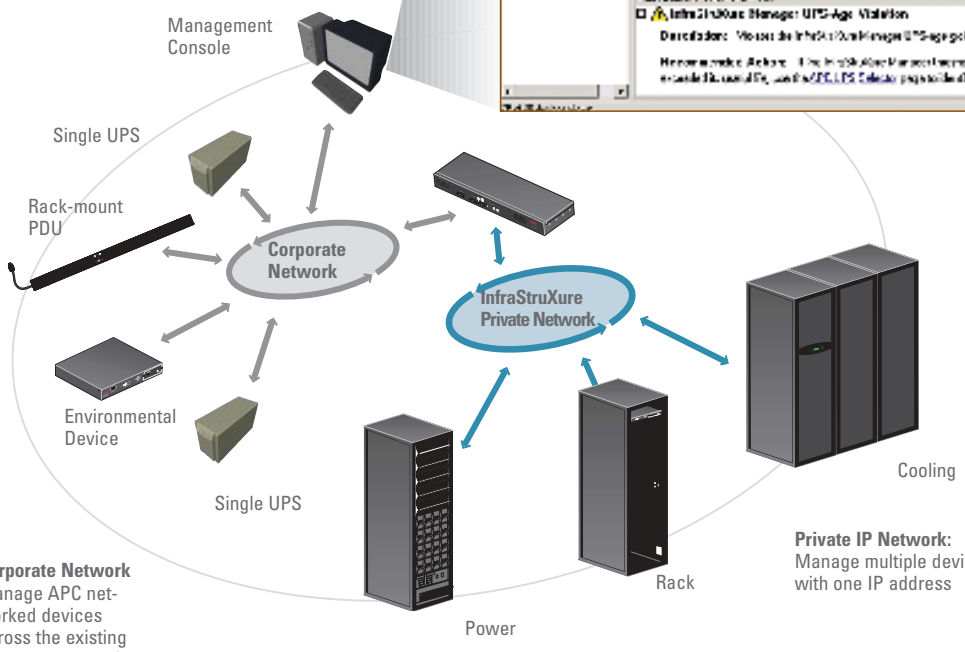
Notification Groups
Ensure the right people receive warnings

Browser Accessible
Quick access from anywhere on the network



MANAGE APC DEVICES ON THE CORPORATE OR INFRASTRUXURE™ NETWORK

Multi-device Support
Extensive range of APC devices



Device Status Summary
Red: Urgent
Yellow: Needs attention
Green: Normal

Recommended Actions
Reduces training, eases deployment and speeds troubleshooting

Corporate Network
Manage APC networked devices across the existing corporate network

Private IP Network:
Manage multiple devices with one IP address

Server Access

LCD Monitor

- Occupies only 1U of rack space
- 15" TFT active matrix screen provides a high quality, flicker-free display
- Full-size keyboard with 104 full travel keys and integrated number pad
- Low power/cooling requirements compared to a comparable CRT monitor solution
- Solid steel construction with a powder-coat paint finish

KVM Switches

- Manage multiple servers with just one keyboard, monitor and mouse
- Multi-platform supports any combination of PS/2, USB and Sun computers
- On-screen display of easy-to-use menus to switch between servers
- Plug-and-play operation lets you add or remove servers without having to power off the switch
- "Keep Alive" feature: attached servers can power the unit in the event of a power failure
- 8 and 16 port versions

UPS Management

Network Management Card

- Embedded management of UPSs protecting servers and networking equipment
- Browser-accessible UPS management
- Notification of threatening situations
- Reboot of hung equipment
- Integrates into your preferred management system

Environmental Management

Environmental Management System

- Browser-accessible 1U rack-mountable appliance
- Monitor a wide range of access and environmental conditions
- Monitor third-party devices via 8 input contacts
- Control third-party devices via 2 output relays
- Early warning notifications to appropriate personnel

Environmental Monitoring Unit

- Browser-accessible 1U rack-mountable appliance
- Temperature and humidity monitoring
- Monitor third-party devices via 4 input contacts
- Control third-party devices via 1 output relays
- Early warning notifications to appropriate personnel

ENVIRONMENTAL MANAGEMENT SYSTEM DESIGN BENEFITS

1U Rack-mountable Appliance: Remote Management of Access and Environmental Conditions

Front view: LCD Status Screen

Alarm Beacon: Quickly locate potential problems

Vibration Monitoring: Monitor shock and vibration to equipment.

Access Monitoring: Includes two door sensors to monitor access to equipment.

Temperature and Humidity Monitoring: Changes are reported via user interface or e-mail.

Reboot equipment remotely: Turn off outlets not in use or recycle power to locked-up equipment.

Customizable Input Contacts: Monitor conditions from third-party devices that have contact closures.

Customizable Output Relays: Control the output from 2 third-party devices.

SERVICES

The typical data center investment spans 11 years, so it's important to choose your investment wisely. InfraStruXure's standardized, open building-block approach lets you adapt over the lifetime of your data center, while benefiting from a lower total cost of ownership. APC is a trusted partner, with the expertise to support you through the complete data center cycle of planning, installation, operation, and end-of-life services.

Using APC Global Services lets you access project engineering expertise gained from years of experience designing and implementing complex infrastructure solutions. An APC certified installation and commissioning of your system ensures that the equipment is configured for optimal performance. This saves you time, money, and extends the life of your hardware.

The 11-year Data Center Life Cycle

[11 years]

Planning [1 year] → **Installation** [3-6 months] → **Operations** [8-9 years]

Phase 1: Planning

Assessing needs, including business requirements

- Needs Assessment
- Field Applications

Solution design

- Standard Application Engineering
- Custom Application Engineering

Phase 2: Installation

Planning and managing the installation

- Procurement
- Project Engineering
- Project Coordination
- Project Management

Building and commissioning

- Assembly
- Start Up

Testing

- Factory Acceptance Testing
- Loadbank Testing
- Thermography

Phase 3: Operations

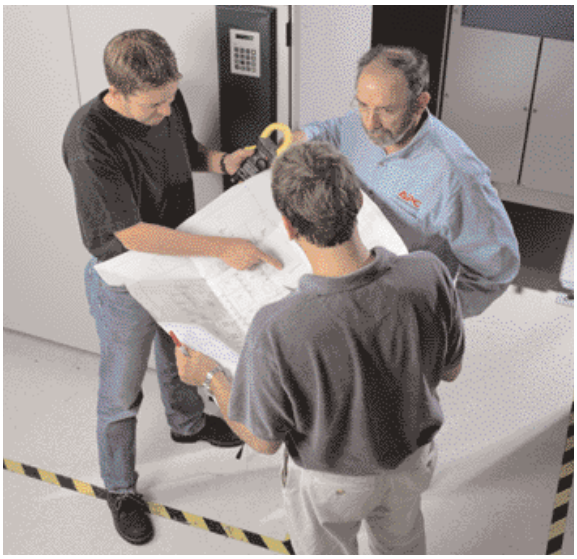
Manage and support

- Remote Monitoring
- On-site Repair
- Project Management
- Add/Move/Change
- Defect Corrections and Avoidance Process
- Escalation Policies
- Data Center Guideline Procedures

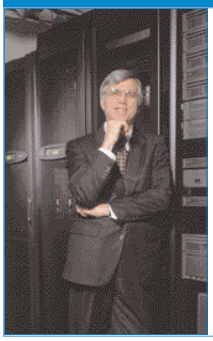
Phase 4: End of Life

Planning and managing decommissioning

- Procurement
- Project Management
- Project Coordination
- Project Engineering



Industry: Education **Application:** New Data Center



"APC customer service continues to be unparalleled in today's market. APC was incredibly flexible with our ever-changing delivery schedule. **Our InfraStruXure™ just rolled into place and plugged in, quick and easy. Even with all the extra people, the installation and user training took only four hours. The installation went very smoothly.**

"Every APC professional was very conscientious, right down to being careful not to scratch the parquet floor. They even showed us some cable management techniques that made things easier.

"InfraStruXure now protects all the major applications in our Boston location. The ingenious design of the InfraStruXure minimizes the potential for human error and, therefore, increases our "peace of mind" quotient. InfraStruXure and APC are everything we could have asked for—intuitive, scalable power protection backed by professionals."

Steve Painter | Senior Vice-President, IS | **ACIS**

End of Life
[1 year]

APC Global Services

Needs Assessment Services

Our APC Certified Field Service Engineer will visit your site and collect data pertaining to electrical loads, wiring practices, power quality, existing power protection equipment, and environmental conditions.

Project Management

In order to prepare for installation of your new APC solution, we will make sure all electrical or mechanical contract work is completed in time for delivery and set up of the system components.

Installation Planning

We will meet with you prior to installation to offer guidance on how to physically position and connect the APC hardware to your current infrastructure.

Factory Acceptance Testing

This testing, performed at the factory site, utilizes a standard set of test procedures for design validation and to ensure the proper operation of the product.

Assembly

Once your equipment has arrived, we will unpack all components, dispose of all packaging, position the equipment in place, assemble the racks, and populate them with UPS and PDU components.

Start Up

An APC Certified Field Service Engineer verifies all connections on your system. Once the unit has been powered up, we ensure it is functioning correctly in all modes of operation. Receive basic operational instructions to familiarize you with the components of your system.

Network Integration

APC Global Services Network Integration Engineers can assist in all tasks associated with your move to a new system, including planning the rack configuration, performing server migration and cable management, and installing APC management software.

Remote Monitoring

Expert outsourced monitoring via APC's InfraStruXure™ Manager.

APC On-site Repair

Our Field Service Engineers are trained to isolate and correct the problem as quickly as possible. APC offers flexibility with 4 Hour, Next Day, and Next Business Day response times.

Preventative Maintenance

In order to keep your APC systems running at maximum efficiency, APC will examine your system's design to ensure optimal performance.

5 EASY STEPS TO BUILD YOUR INFRASTRUXURE™

The **InfraStruXure™ BuildOut Tool** lets you design and specify InfraStruXure solutions using a Web-based configurator.

Benefit now from configure-to-order systems, speed of design, and the fact that you can configure your solution yourself.

Take these **5 easy steps**:

1. **Specify number of racks** (See floor layout below)
2. **Define load per rack or total load**
3. **Specify runtime**
4. **Choose price, value, or performance solution** (See Web-based Tool below)
5. **Customize as desired**

Need an expert site review?

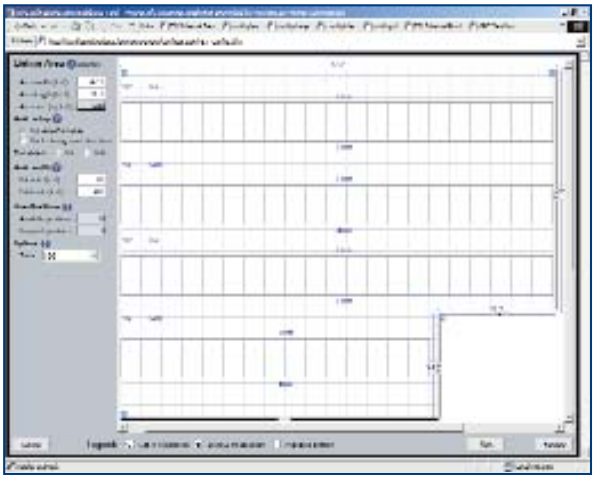
APC Reliability Provider AUTHORIZED

APC Reliability Provider CERTIFIED

Go to our APC Authorized/Certified Partner locator at ***www.apc.com*** under the 'How to Buy' Section.

Floor Layout

Draw your ideal floor plan and specify the number of racks

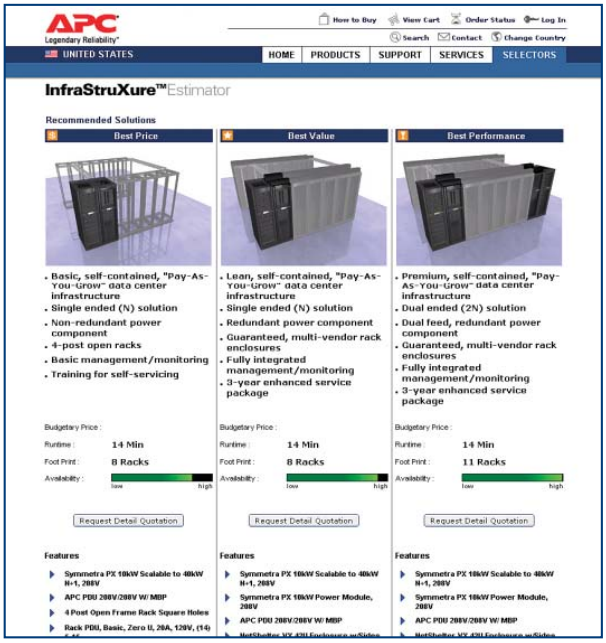


APC's innovative InfraStruXure Buildout Tool has been acknowledged with a 2003 *Computerworld* Medal of Achievement.

Acknowledgements: 2003 *Computerworld* Medal of Achievement
http://cwheroes.org/his_4a_detail.asp?id=4566

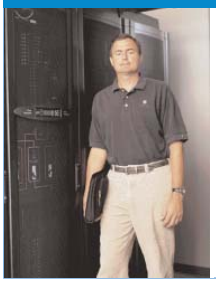
Web-based BuildOut Tool

Overview of price, value, and performance solution and its budgetary price



To learn more about InfraStruXure™ and the BuildOut Tool, visit us at *www.infrastruxure.com*

Application: Manufacturing **Industry:** Voice Over IP



"InfraStruXure is the only complete power architecture available on the market today. Now a client can acquire a rack, power distribution unit (PDU), UPS, environmental monitoring, cables, cable management, and software as one tightly integrated solution from one vendor. In addition, the **architecture permits the realization of huge time savings in the electrical installation process. This is the first 3-phase architecture they've seen that literally installs in hours rather than in days or even weeks.**"

"The APC InfraStruXure Configure to Order (CTO) process helps to build the customer's confidence level by rapidly delivering customized, yet integrated, power components to the customer's data center location. **The easy access we have to APC support and technical staff, as well as the new, state of the art InfraStruXure configuration BuildOut Tool (BOT), make InfraStruXure a simple, painless solution to install.**"

Paul Robinson | Data/Voice Division | **Carlyle, Inc.**

COMPANY PROFILE

- **For over 20 years** APC has advanced new availability technologies through forward-reaching research and development.
- **Propelled by real-world experience** and a drive towards technological innovation, APC has the experience, scale, global presence, and stability required to respond to emerging IT availability trends.
- **Our corporate culture** is dedicated to a single purpose, with employees worldwide ensuring availability wherever data is created, transmitted, or stored.
- **Our products range from** surge suppressors, uninterruptible power supplies (UPS), cabling, connectivity products, precision cooling solutions, DC power systems, and management software to consulting and professional services.
- **With no long-term debt** and a strong financial position, APC supports an active and ongoing research and development program.
- **Over 15 million valued customers** worldwide and hundreds of industry-related awards are the result of our ability to solve real-world availability problems.

* * *

- **APC Thermal Test Lab**

APC Thermal Test Lab in Kolding, Denmark exemplifies our commitment to solving data center and server room challenges. This comprehensive thermal test lab contains two integrated chambers that allow concurrent simulations of both indoor and outdoor environments, fully supporting worldwide electrical power requirements.

- **APC White Papers**

APC white papers provide valuable technical information on emerging IT industry trends. There are over 50 APC white papers on subjects relating to data center and facilities environments, with development of new topics ongoing. Please see the back cover of this brochure for information on how you can receive a free APC white paper.

APC
Legendary Reliability®

APC offers presence and partners across the globe, delivering peace of mind no matter where your needs lie.

2004 Forbes THE PLATINUM LIST

As the recipient of hundreds of awards worldwide, APC is recognized for excellence in both its business and product performance. Every year since 1999, APC has been named to the Forbes Platinum 400 list of the Best Big Companies in America.

INFORMATIONWEEK 500

Information Week *identifies the most innovative users of IT from U.S. companies with $1 billion or more in annual revenues.*

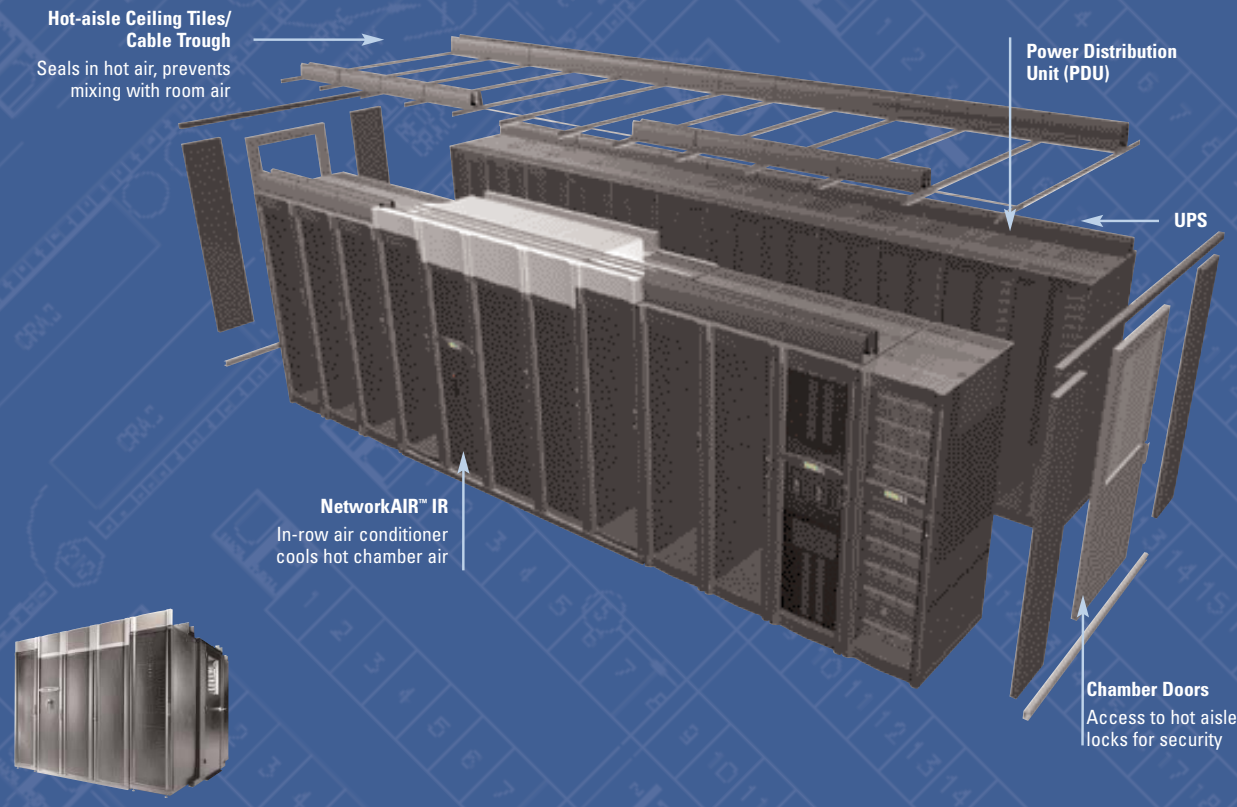
- Awarded 2003, for the fourth year in a row.

APC American Power Conversion
NASDAQ-100 LISTED

The NASDAQ-100 Index is composed of the 100 largest non-financial stocks on the NASDAQ stock market.

The InfraStruXure™ Hot-aisle Containment System is a patent-pending system that cools up to 20kW of blade servers in a single enclosure. Its compact footprint and integrated, modular components make it ideal for applications such as:

- Existing Data Centers with Limited Capacities
- Server Consolidation Projects
- Rack Storage Systems
- Disaster Recovery Sites
- Blade Server Roll outs
- Converted Spaces


Hot-aisle Ceiling Tiles/ Cable Trough
Seals in hot air, prevents mixing with room air
Power Distribution Unit (PDU)
UPS
NetworkAIR™ IR
In-row air conditioner cools hot chamber air
Chamber Doors
Access to hot aisle, locks for security

For more information on the Hot-aisle Containment System and other InfraStruXure™ cooling solutions, see pages 12-13.

To receive a FREE APC White Paper on "Determining Total Cost of Ownership for Data Center and Network Room Infrastructure", please visit us online at *http://promo.apc.com* and enter key code *j228y*, call 888-289-APCC x2700, or fax 401-788-2797. Other APC white papers are also available.

ISO 9001 ISO 14001
APC's Manufacturing System is certified by ISO 9001 and ISO 14001 Standards

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